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THE DEVELOPMENT OF AN ENTOMOLOGIST.

The following letter received some time ago from one of the brightest and most promising of the younger generation of entomologists, not in the Government service, will appeal to more than one of the members of this division.

"It appears to me that the form of teaching which deals with book statements regarding insect life, and with pictures, even good lantern slides, largely, instead of with living, active insects will always fail to make a man into an independent observer. All this sort of teaching should follow, rather far away, the study of the living, active organisms themselves.

"Years ago, when I was a boy collecting insects and beginning to mount them rather well, our botanist and entomologist said to me one day, 'You do not seem to be at all interested in this work. I wish you would take this book and read up about these butterflies and their habits.' I did read up and acquired almost and active dislike for the subject. But I did notice some illustrations of native bombycids, and did find among some papered specimens a Luna moth or two which I mounted. Then, in the winter I ran across the cocoon of what we called Platysamia ceanothi. It was to me very marvelous, the tough outer envelope, the beautiful brown inner cocoon suspended from the outer. A much more perfect cocoon than that of the eastern form. And when the moths from a dozen such cocoons emerged in the spring I raved over their beauty. That woke me up.

"I put aside all the books the second summer, stopped general collecting except in the butterflies of the region, whose beauty held me; and began rearing everything under the sun. That summer I learned more about insect life than in all the years that followed for another decade. The delightful novelty of the whole thing was so amazing. I resolved to be an entomologist.

"The third summer I began making exhibition mounts for our collection. I had a mounted life history of the cabbage butterfly; another of the Platysamia of which I spoke; one of a nest of wasps, Polistes, with bottled stages, from the eggs to the adult; carpenter worms and their work with the chrysalids and male and female moths; the clothes moth; the larder beetle; various insect galls and their makers, and the larval stages. I think they were excellently mounted and labeled; the whole thing done with taste and great accuracy. These rearings, and the making of these mounts gave me an interest which has made or marred my whole life (mother wanted me to be an Episcopal clergyman). Any amount of lecture work in the class room would have been listened to attentively, on it I should have passed good examinations; I would have forgotten it all by now. The joy of doing it all myself, the pleasure of learning, the zeal and enthusiasm growing out of the use of my growing powers faster than they really grew; these things made me an entomologist."

There seems to be some misapprehension, among some of the men of this division, relative to cooperative work within the section, due to the fact that they have not taken all factors in the question under full consideration.

There are some points at present to be considered that have never before confronted those engaged in entomological work in this or any other country. Ever since the dawn of applied entomology, workers, both State and National, have been few and widely separated. Cooperation has not, except in rare cases, been possible, and each investigator has applied himself to the study of such insects as occurred in his immediate neighborhood or in his particular State. Indeed, no other course was left open to him. When his work was finished and the results published, the information was almost necessarily at once applied to the entire country, over which the subject of his study was distributed. We are now coming to find out, and much to our sorrow, that in many cases what was found true in one part of the country did not necessarily hold good at distant points. Farmers, following recommendations given for a certain section of the country, found that the advice given them offered them little or no aid in protecting their crops, and they proceeded at once to blame the entomologist. As it was not possible for the entomologist to be in more than one place at once and then only inside of his own State, the defect could not possibly have been remedied. Under present conditions it will now be possible to put two score men of this branch at work on the same insect, at as many different points in the United States, on the same day if necessary; something that could never have been done before in the history of entomology.

Never before has there been such a group of trained entomological investigators brought together, working as a single body. For this reason, by mutual cooperation between individuals of this branch, we are able to carry out investigations over a wide range of country, under the same system and with strict uniformity, thus securing facts not before obtainable relative to whatever insect may be under consideration and under whatever environment it may occur. To assign to one man alone the investigation of an insect in any single locality, keeping others of the force in other localities under different environments from doing so would be to place ourselves back into the old methods of doing things, but without the same justification, besides unnecessarily sacrificing the prestige we have gained.

With our advanced position we must of necessity revise our methods to correspond therewith. This can only be done by assigning to an investigator a certain piece of work in which he must be able to hold the lead, while everyone else throughout the area of distribution of that species makes all the observations possible and does all possible work thereon whenever and wherever it can be done. Then, when the results are brought together and published, we shall have something that will be as accurate for one locality as for another - just what has never before been possible, nor can it now be possible under any other system except one as exact and comprehensive as ours. It goes without saying that not only will the individual be able to present matter such as could not previously have been obtained, but also, as strict credit must in all cases be given, those who have aided him have in this way lost nothing and will themselves reap a similar benefit when it becomes their duty to take up some major problem, study it, and publish thereon.

The fact is that we have entered upon a new area, from which less powerful and well organized bodies are necessarily debarred. We can now do, by internal cooperation, what has never been possible heretofore, in which, in the end, the individual worker not only loses nothing in the way of individual credit, but, sooner or later, is bound to gain immensely thereby.

In dissecting small larvae it is convenient to hold them by imbedding to a slight depth in paraffin. In order to render the structure easily visible the paraffin may be blackened by melting into it a small quantity of shoe-blacking (paste). The melted paraffin may then be poured into an ordinary flat-bottomed watch glass. A larva may be imbedded at any time by melting a groove in the paraffin with a fine wire. The dissecting may be done on the stage of the binocular microscope under water or alcohol and the preparation covered at any time with another watch glass. W. R. McCONNELL.

A very satisfactory vial for collecting small Coleoptera can be made with any large vial with cork to fit, and a small test tube whose diameter is smaller than that of the cork. Bore a hole through the cork slightly smaller than the diameter of the test tube and after breaking off the bottom of the test tube, force it through the hole in the cork until the mouth of the test tube is even with the top of the cork. Then insert the cork into the vial. Do not break the bottom off the test tube with any care as the more uneven the break the more satisfactory will it be. The test tube should protrude about one inch into the vial from the bottom of the cork. This contrivance acts like a trap, as the beetles which are dropped into the vial through the test tube do not attempt to crawl out. When in the field the mouth of the test tube may be left open, thus eliminating the nuisance of a stopper. The vial can be carried in any position without fear of the beetles falling out. E. H. GIBSON.

A common pasteboard mailing tube, such as is used by the department in sending out liquids and other supplies, may be easily converted into a very satisfactory jassid collecting tube. The most convenient size tube is the one 6-1/2 by 1-1/2 inches. The end with the tin screw top should be left intact, while the other end is knocked off and over this end stretched a piece of white cloth, such as is used in covering insect cages. Most any kind of cloth which is of light weight and allows the light to penetrate through will do. The cloth is stretched very tightly and held so by an elastic band. Jassids caught in a net may be transferred into this tube by unscrewing the tin cap and placing this open end over the jassid against the net. Once the jassid is in the tube and the tin cap put back on, the jassid will hop to the other end, attracted there by the light coming through the cloth, and stay there. The advantage of this tube is in the fact that the tin cap may be taken off for a couple of minutes at a time without any fear of losing the jassids already in it, as they will remain at the cloth end. There is no sweating within the tube. A tube of the above mentioned size will accommodate fifty jassids. E. H. GIBSON.

Mr. W. R. Thompson, who has during the past year been engaged in collecting and forwarding parasites of the alfalfa weevil, has resigned to take up a course of study in the University of Paris. He will, however, continue his connection with us as collaborator.

Two tachinid parasites of Plathypena scabra have been reared recently at the Greenwood station by Mr. E. H. Gibson. Neither of them has before been recorded from this host. They are Cuphocera ruficauda and Neopales flavicauda V. d. Wulp.

Experience during the last two seasons has shown that ordinary tin tomato cans are preferable to earthenware florist pots for carrying insects on growing food plants. The plants thrive much better and seldom need watering. The Hawaii Station has discarded the pots for cans for growing seedling plants. GEO. G. AINSLIE.

Mr. Wildermuth has succeeded in rearing the tachinid fly, Compsilura concinnata from the larva of the range caterpillar (Hemileuca oliviae). This is one of the imported enemies of the gipsy and brown tail moths, material for this experiment having been supplied by Mr. Burgess from the gipsy moth laboratory at Melrose Highlands, Mass.

The discovery of alfalfa weevils, in potatoes shipped in refrigerator cars, has been duplicated by Mr. Miles of the Salt Lake City, Utah, laboratory, who has been stationed for some time at Denver, Colo., charged with the examination of all such freight cars consigned from within the area covered by the weevil. There were very few individuals in any of the cars.

The rhynchophorid beetle Centrinus penicellus has been found breeding very generally, throughout the southeast, in the stalks of corn. The egg is placed in the stalk, at the base of the tassel, and the larva works downward, usually to the second node, where it will be found about mature in early October, forsaking the stalk for the ground in late fall or early winter. I would like to get records of the presence of this beetle or its larvae from other localities. GEO. G. AINSLIE.

During late October the Range Caterpillar Investigation Camp, near Koehler, New Mexico, was discontinued until the opening of the investigation next spring. The equiptment has been stored and the men distributed to other field stations. Despite the unusually discouraging weather conditions, the results of the season's work have been very encouraging and all has been accomplished that could have been expected. We shall begin another year with a great deal of the preliminary work out of the way, in excellent shape to follow out projects which it has not been possible to take up at all this year